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# Quality Engineering Test Report

**SERIES: PS-65 60W WATTS SIGLE OUTPUT SWITCHING POWER SUPPLY OPEN FRAME TYPE**

**SAMPLE:**

| | | | | |
|---|---|---|---|---|
| A.PS-65-5 | 5V / 12A | D. PS-65-24 | 24V / 3A |
| B.PS-65-12 | 12V / 5.2A | E. PS-65-48 | 48V / 1.5A |
| C.PS-65-15 | 15V / 4.2A | | |

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT |
|---|---|---|---|---|
| 1 | AC INPUT VOLTAGE RANGE | I/P:TESTING SPEC:90~264VAC<br>O/P:FULL LOAD | A:65.85VAC~267VAC | P |
| 2 | LINE REGULATION | I/P:85~264VAC SPEC: A: ±1%<br>O/P:FULL LOAD B: ±1%<br>C: ±1%<br>D: ±1%<br>E: ±1% | A: -0.12% % ~ 0% %<br>B: 0% % ~ 0% %<br>C: 0% % ~ 0% %<br>D: 0% % ~ 0% %<br>E: 0% % ~ 0.01% % | P |
| 3 | LOAD REGULATION | I/P:230VAC SPEC: A: ±3%<br>O/P: B: ±2%<br>MIN. TO FULL LOAD C: ±2%<br>D: ±2%<br>E: ±2% | A: -0.24% ~ +0.36%<br>B: -0.05% ~ +0.05%<br>C: 0% % ~ 0.04%<br>D: -0.02% ~ 0% %<br>E: -0.01% % ~ +0.01% | P |
| 4 | OUTPUT VOLTAGE TOLERANCE | I/P:85~264VAC SPEC: A: ±3%<br>O/P: B: ±2%<br>MIN. TO FULL LOAD C: ±2%<br>D: ±2%<br>E: ±2% | A: -0.5% ~ +0.24%<br>B: 0 % ~ +0.1%<br>C: 0 % ~ +0.04%<br>D: -0.02% ~ +0.02%<br>E: 0 % ~ +0.03% | P |
| 5 | RIPPLE & NOISE | I/P:230VAC SPEC: A:100mV<br>O/P: FULL LOAD B:100mV<br>C:100mV<br>D:100mV<br>E:100mV | A: 66mV<br>B: 77mV<br>C: 21mV<br>D: 28mV<br>E: 43mV | P |
| 6 | AC INPUT CURRENT | I/P:230VAC SPEC: 0.9A<br>O/P:FULL LOAD | A:0.7A | P |
| 7 | MAX. INRUSH CURRENT | I/P:230VAC SPEC: 40A<br>O/P:FULL LOAD | A:32.39A | P |
| 8 | O/P VOLTAGE ADJ.RANGE | I/P:230VAC SPEC:-5%~+10%<br>O/P:MIN. LOAD A:4.75V~5.5V<br>B:11.4V~13.2V<br>C:14.25V~16.5V<br>D:22.8V~26.4V<br>E:45.6V~52.8V | A:4.28V~6.18V<br>B:9.33V~13.73V<br>C:12.62V~18.85V<br>D:17.23V~27.6V<br>E:38.8V~53.6V | P |
| 9 | SET UP TIME | I/P:230VAC SPEC:800ms<br>O/P:FULL LOAD | A:552.86mS | P |
| 10 | HOLD UP TIME | I/P:230VAC SPEC:20mS<br>O/P:FULL LOAD | A:93.66mS | P |

| NO | TEST ITEM | TEST CONDITION / SPECIFICATION | RESULT | VERDICT |
|---|---|---|---|---|
| 11 | EFFICIENCY | I/P:230VAC<br>O/P: FULL LOAD<br>SPEC: A:76%<br>B:79%<br>C:79%<br>D:80%<br>E:80% | A: 76.5%<br>B: 80.24%<br>C: 81.83%<br>D: 83.25%<br>E: 83.95% | P |
| 12 | OVER LOAD PROTECTION | I/P:230VAC<br>O/P: TESTING<br>SPEC:<br>A: 73~105W<br>B: 73~105W<br>C: 73~105W<br>D: 73~105W<br>E: 73~105W | A: 78.84W<br>B: 83.56W<br>C: 78.74W<br>D: 93.44W<br>E: 97.67W | P |
| 13 | OVER VOLTAGE PROTECTION | I/P:230VAC<br>O/P:TESTING<br>SPEC:115%~135%<br>A : 5.5V~6.75V<br>B : 13.2V~16.2V<br>C : 16.5V~20.25V<br>D : 26.4V~32.4V<br>E : 52.8V~64.8V | A: 6.20V<br>B: 14.08V<br>C: 19.03V<br>D: 28.3V<br>E: 53.7V | P |
| 14 | GROUND LEAKAGE CURRENT | I/P:240VAC<br>SPEC:<br>L-FG--<0.5mA<br>N-FG--<0.5mA | B: L-FG:0.4 mA<br>N-FG:0.4mA | P |
| 15 | INSULATION RESISTANCE | SPEC: O/P-FG 500VDC/50MOhms MIN.<br>I/P-O/P 500VDC/50MOhms MIN.<br>I/P-FG 500VDC/50MOhms MIN. | A: O/P-FG >50MOhms<br>I/P-O/P >50MOhms<br>I/P-FG >50MOhms | P |
| 16 | DIELECTRIC / WITHSTAND VOLTAGE | SPEC: I/P- O/P: 3000VAC/ 1 sec (10mA CUT-OFF)<br>I/P - FG: 1500VAC/ 1 sec (10mA CUT-OFF)<br>O/P - FG : 500VAC/1sec (10mA CUT-OFF) | A: I/P-O/P :3.38mA<br>I/P-FG :3.52mA<br>O/P- FG :1.93mA | P |
| 17 | BURN-IN TEST | I/P: 230VAC O/P:FULL LOAD<br>TA:25.4°C BURN-IN DURATION : 1.33 hrs | A: NON BREAK | P |
| 18 | ENVIRONMENT TEST | 1.LOW TEMPERATURE TEST<br>I/P:80 VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:-8.5°C | AFTER 2 hrs<br>POWER ON OK | P |
| | | 2.HIGH AMBIENT TEMPERATURE FULL LOAD TEST<br>I/P:230VAC O/P:FULL LOAD<br>AMBIENT TEMPERATURE:45.1°C | AFTER 14 hrs<br>NON BREAK | |
| | | 3.ACCELERATED LIFE TEST<br>I/P:267VAC O/P:FULL LOAD<br>POWER ON :3 min POWER OFF :5 sec<br>AMBIENT TEMPERATURE:85°C<br>AMBIENT HUMIDITY:95% | AFTER 3.5 hrs<br>NON BREAK | |

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<table>
<tr><th>NO</th><th>TEST ITEM</th><th>TEST CONDITION / SPECIFICATION</th><th>RESULT</th><th>VERDICT</th></tr>
<tr><td>19</td><td>TEMPERATURE RISE TEST<br>Trise OF PARTS</td><td>I/P :230VAC AFTER 1.33 hrs BURN-IN<br>O/P :FULL LOAD TA:25.4°C
<table>
<tr><th>POSITION</th><th>P/N</th><th>TEMP</th><th>Trise</th></tr>
<tr><td>BD1</td><td>BRIDGE DIODE</td><td>55.1°C</td><td>29.7°C</td></tr>
<tr><td>Q1</td><td>MAIN TRANSISTOR</td><td>78.3°C</td><td>52.9°C</td></tr>
<tr><td>T1</td><td>MAIN TRANSFORMER COIL</td><td>68.1°C</td><td>42.7°C</td></tr>
<tr><td>D4</td><td>O/P DIODE</td><td>94.1°C</td><td>68.7°C</td></tr>
<tr><td>C5</td><td>I/P FILTER CAPACITOR</td><td>45.8°C</td><td>20.4°C</td></tr>
<tr><td>C22</td><td>O/P FILTER CAPACITOR</td><td>74.1°C</td><td>48.7°C</td></tr>
<tr><td>T1</td><td>MAIN TRANSFORMER CORE</td><td>75.4°C</td><td>50°C</td></tr>
<tr><td>D1</td><td>CLAMP DIODE</td><td>92.8°C</td><td>57.4°C</td></tr>
<tr><td>LF1</td><td>LINE FILTER</td><td>49°C</td><td>23.6°C</td></tr>
</table></td><td></td><td>*<br>NOTE1</td></tr>
<tr><td>20</td><td>LIFE CYCLE</td><td colspan="2">SUPPOSE C22 IS THE MOST CRITICAL COMPONENT<br>I/P:230VAC O/P:FULL LOAD Ta:25°C Tc22:73.7°C Life: 23966 hrs<br>I/P:230VAC O/P:FULL LOAD Ta:40°CTc22:81.9°C Life: 13575 hrs</td><td>P</td></tr>
<tr><td>21</td><td>CRITICAL COMPONENT RECORD ( FOR QC INSPECTION REFERENCE ONLY )</td><td colspan="3">FUSE :4A/250VAC GFE.<br>BRIDGE DIODE :LT KB408G.<br>LINE FILTER :LS TF-484.<br>TRANSFOMER :LS TF-461<br>POWER SWITCHER :K2545<br>OUTPUT DIODE :D83-004.<br>OUTPUT CAPACITOR :ELNA 1200uF/16V , 105°C, RJH<br>INPUT CAPACITOR :HITACHI 150uF/400V,85°C<br>P.C.B :PS-65,CEM-1 2 OZSS 127mm x 76.2mm</td></tr>
<tr><th>DATE</th><th>SAMPLE</th><th>TEST RESULT</th><th>TEST</th><th>APPROVAL</th></tr>
<tr><td>971220</td><td>PS-65</td><td>NOTE1:WORKING TEMPERATURE>=40°C, OUTPUT SHOULD DERATING</td><td>H.C.LIOU</td><td>Max Lin</td></tr>
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